

Join Our

# Pest Patrol!

Photo Courtesy Minnesota Department of Transportation.



Purple Loosestrife

**A Backyard  
Activity Book  
for Kids  
On Integrated Pest  
Management**



Ladybird Beetles Eating Aphids

Photo Courtesy U.S. Department of Agriculture.

**H**ave you ever been bitten by a flea or mosquito? Treated your dog for fleas? Had head lice? Been stung by a wasp or bee? Watched weeds overtake your garden? Fought to keep cockroaches out of your school building?

We've all been bugged at one time or another by pests. For many of us, our first reaction is to reach for the nearest can of bug spray. But, pesticides and fertilizers that run off from lawns and other locations are a significant source of pollution in our environment. There's a better way to solve pest problems called Integrated Pest Management (IPM). IPM is an effective and environmentally sensitive approach to pest management that relies on a combination of common sense practices. Teaching IPM at the grade school level can provide children with important information about pest identity and biology, and ecology. It can also help children understand the impact that personal choices—like whether or not to use chemicals to control pests—can have on our environment.

*Join Our Pest Patrol: A Backyard Activity Book on Integrated Pest Management*, originally developed by the Minnesota Department of Agriculture, is for educators of children in grades 1–6. *Join Our Pest Patrol* is chock full of fun activities that can easily be incorporated into reading, science, and even math and art classes. The activities are written for the 3–5 grade level, but can be easily adapted for the lower or upper grades. Each activity includes fun facts in "Did You Know," and "Tips for Grown-ups." There are also lots of links to interesting web sites that allow educators to expand their students' learning. Answers to all quizzes are located at the end of the book inside the back cover. We've also included a Web Resources List on pages 26 and 27 of all the web links identified in the activities for easier reference.

We hope you enjoy *Join Our Pest Patrol* and invite you to tell us about how you've used this resource by completing our Customer Feedback Form on page 28. Good luck, and thanks for your interest in Integrated Pest Management!

EPA thanks the following people who contributed to the activity book:

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# Insects: What's a Pest?

The world has more insects than all other living things combined. We need insects! Many insects work for us. They visit flowers and spread pollen so plants can produce fruits and vegetables. Some insects eat other insects that damage plants. These "worker" insects are welcome **guests**.

All insects have a place in the web of life. However some insects are a nuisance and some can be harmful. We call insects **pests** when they hurt, damage, destroy, or make us or our animals sick.

Gnats are an important food source for birds and frogs. Those animals don't think of gnats as pests at all.

Look for spider webs. Count the insects. You'll know spiders are at work!

Insects destroy 10–15% of the world's food each year.

Did You know?

## Pests or Guests

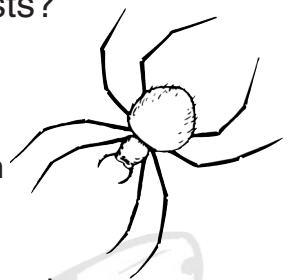


When are insects pests? And when are they welcome guests?

**A** In the boxes mark **P** for pest or **G** for guest.

**B** Fill in the blanks below.

Ant, bee, cockroach, grub, mosquito, spider, wasp, worm

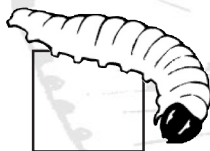


1 It chews and kills corn plants. No corn for us!

☐

5 It preys on other insects that may harm plants.

2 It bites into apples.



6 Its bite can give your dog or cat heartworm disease.

☐

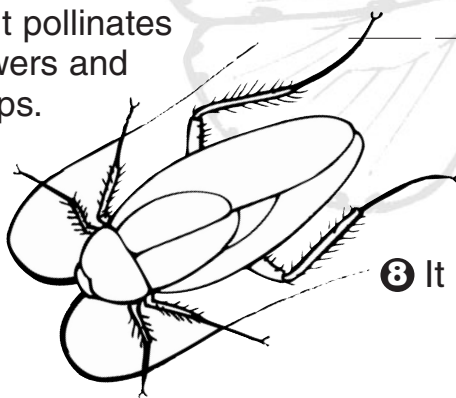

3 It pollinates flowers and crops.

☐

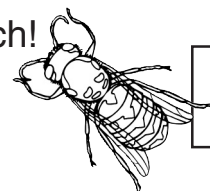
7 It shows up at your picnic.


☐

4 It can trigger an asthma attack.

☐


8 It may sting. Ouch!


☐

This book shows some ways to fight the pests with least harm to the earth and other creatures.



# Insect Pests and Pals

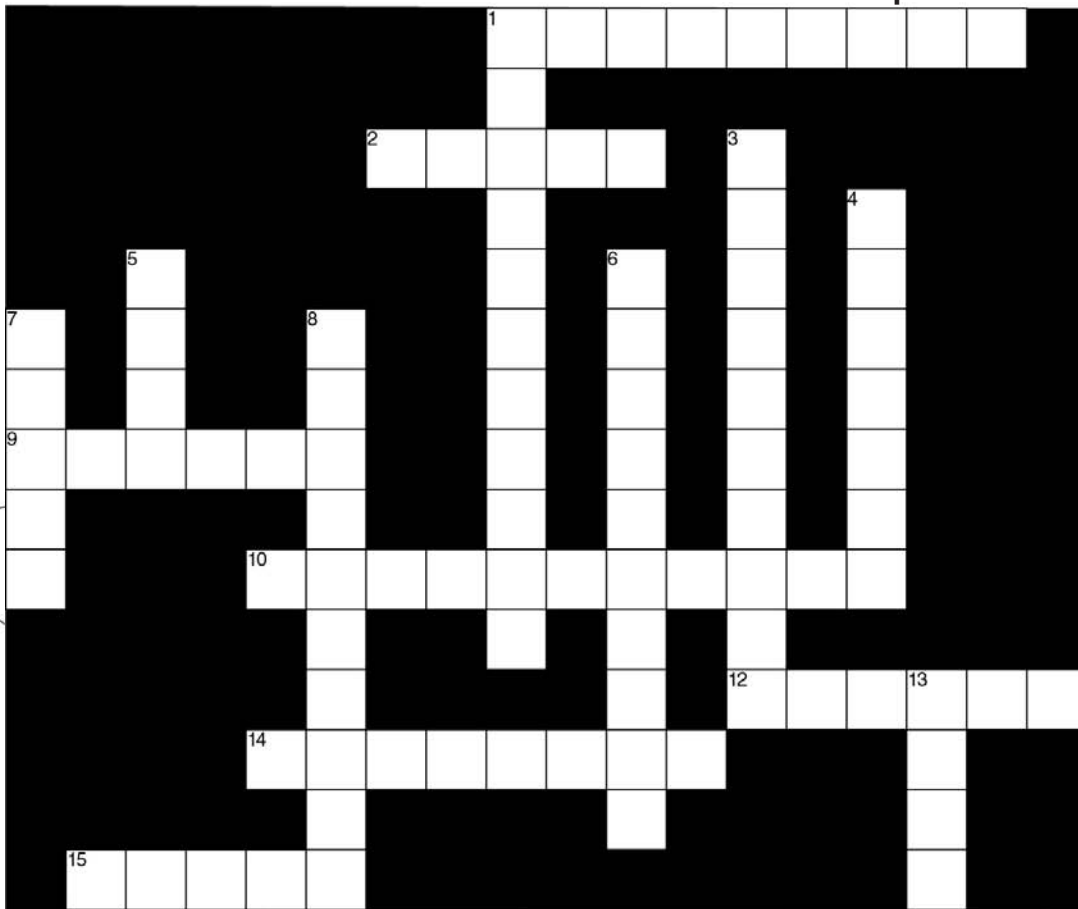
Some bugs help us. Some bugs pester us. All bugs are part of the web of life. If you think all bugs belong in bug zappers, think again!

Use words from the word bank below to do this puzzle.



What's the only insect that makes food humans eat?

See puzzle No. 13!



## Word Bank

- Aphids
- Bees
- Boxelder
- Butterflies
- Carpenter
- Cockroaches
- Fruitflies
- Gnats
- Houseflies
- Mosquitoes
- Moth
- Spiders
- Sowbug
- Ticks
- Wasps

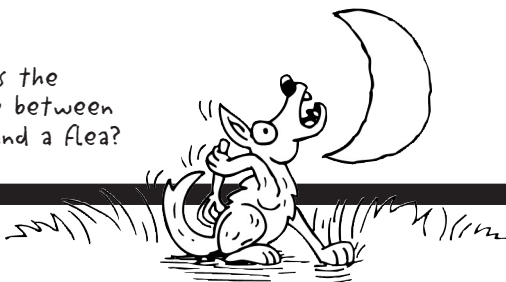
### Across:

1. Large black ant that nests in wood.
2. They get on you to suck your blood.
9. They harm plants by sucking sap.
10. Beautiful insects that drink nectar.
12. Outdoor creepy-crawly that eats rotten plant matter.
14. Red and black bugs that eat tree leaves and seeds but don't kill trees.
15. They sting, but also kill harmful insects.

### Down:

1. They eat almost anything, they like the dark, and they are hard to get rid of.
3. Tiny, flying insects that breed in fruits and vegetables.
4. They have eight legs and eat insects.
5. It eats holes in wool and fur clothing.
6. They spread germs with their feet. Frogs eat them.
7. Small, flying bugs. The female's bite is itchy.
8. They give itchy bites. Bats eat them.
13. They sting, but also make food that humans eat.

What's the difference between a coyote and a flea?



A coyote howls on the prairie. A flea prowls on the hairy.





# Fighting Pests with the 3 Ps

Many scientists are trying to find ways to fight pests. One way is to use pests of pests, or the three **P**s!

**Predators** hunt and kill pests for food.

**Parasites** live on or inside pests and also may kill them.

**Pathogens** cause disease in pests. Pathogens are germs like bacteria or viruses.

## The 3 Ps in Action

In the examples below, which of the 3 Ps is fighting pests?

**1** Bugs are attacking the plants in your school playground. Upon close inspection, you find tiny insects called scales on plant leaves. Insect killers (insecticides) would kill the scales, but might also harm other creatures in the playground. Also, school officials do not want to use insecticides where kids play. School officials work with agricultural extension agents to put tiny stingless wasps to work. These wasps lay their eggs inside the pesty scales. Wasp larvae hatch and grow inside the scales. That kills the scales.



P \_\_\_\_\_

**3** The brown bat can catch 1,200 mosquito-sized insects in just one hour.



P \_\_\_\_\_

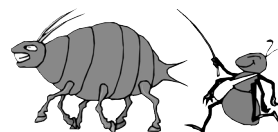
**2** Japanese beetles have invaded America. They eat roots, leaves, flower buds and fruit. They can kill bushes, trees, grasses, and garden and field crops. Now a germ is on the job. It causes a disease that kills the Japanese beetle.



P \_\_\_\_\_

Try This!

Imagine you are one of the 3 Ps.  
**Make a poster to advertise yourself.**



# What's a Weed?

A weed is a plant growing where you don't want it. Weeds steal sunlight, growing space, and moisture from grass and plants we do want.

Weeds spread by seeds. Pull weeds before they set seeds. Then you'll have fewer weeds in the future!

"Seeds one year, weeds for seven."

Each letter is something plants (including weeds) need to survive.

**P** place  
**L** light  
**A** air  
**N** nutrients  
**T** thirst-quenching water



## Tips

### Take a whack at weeds!

- Pull or hoe weeds out. Be sure to get every tiny bit of root so the weed doesn't grow back.
- The best time to get rid of weeds is when they are small.
- Weeds pull more easily from moist soil.

COLOR THIS



Poison ivy is a pest when it grows where we hike or play. It gives you an itchy rash and weepy blisters. Is poison ivy good for anything?

Some animals and birds eat the leaves and berries.

Bees sip nectar from the flowers.

### Tip for Grown-ups:

Teach children to know poison ivy when they see it and to stay away! See [http://www.fda.gov/fdac/features/796\\_ivy.html](http://www.fda.gov/fdac/features/796_ivy.html)

"Leaves of three, let it be."



## Who Needs Weeds?



Milkweed can be a pest when it grows in fields of crops. But what would happen if it disappeared? Monarch caterpillars eat milkweed. Without milkweed, what would happen to monarchs?

Monarch butterflies taste bad to birds because when they were caterpillars they ate milkweed.

Did You Know?



# Dandy... or not?

Many people think dandelions make lawns ugly. Dandelions crowd out grass and can damage sidewalks and pavements. But people long ago thought dandelions were dandy. They used them for medicines. They made fried **flower** blossoms and leafy salads. They boiled and fried **roots** and made roasted root tea. Some people still do!



Color the dandelion. In the blanks, write the name of the plant part and possible uses for the part.

## Dig THIS!

What can you do with dandelions?

- Make a bouquet.
- Make a dandelion chain.  
Pick several dandelions with long stems. Make a small slit in the dandelion stems. Poke the end of the **stem** from one dandelion through the slit on another dandelion. Repeat until you have a chain of dandelions.
- Tie-dye a t-shirt! The dandelion's yellow **flowers**, green **leaves**, and red **roots** can be used to make colorful dyes.



Do you think dandelions are pests?

Yes

No

☐
☐

Dandelion flowers provide pollen and nectar for insects.

One dandelion flower can produce over 300 dandelion seeds! Birds eat the seeds.



## Tip

Want to get rid of dandelions? Pull them out while they still have yellow flowers—**BEFORE** they can spread seeds.

Dandelion seeds are carried by the wind. They travel like tiny parachutes. A strong wind can carry a seed miles away from the parent plant (Science Museum of Minnesota). For more information go to <http://www.smm.org/sin/tf/d/dandelion/dandelion.html>

Did you know?

# Green, Green Grass

It's hard for crabgrass and weeds to take over healthy grass.

Grass that is healthy should require few, if any, chemical weed and insect killers. What times of the year do people feed (fertilize) grass to keep it strong and healthy?

**A bear can help your family remember the right times to fertilize grass.**



In winter, a bear sleeps. It eats nothing.

Grass needs nothing.



In spring, bears are hungry when they wake up. They need food.

Grass needs \_\_\_\_\_.



In summer, bears get what they need without extra help.

Grass needs \_\_\_\_\_.



In fall, a bear pigs out before it hibernates.

Grass needs \_\_\_\_\_.



**Dress each bear for the season.**

## Tip for Grown-ups:

Use a mulching mower to put nutrients back without fertilizing.

Mow grass at a height of 2.5 to 4 inches to help screen out light to the soil surface. This slows growth of weeds like crabgrass that need light to germinate. Grass also grows a deeper root system, which helps it tolerate stress.

Check with your local agricultural extension service to find the right time of year to fertilize your lawn where you live.



A healthy lawn always has some weeds and insects (helpful insects included).

# The Right Plants in the Right Places

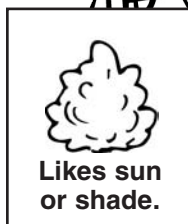
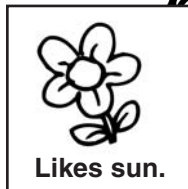
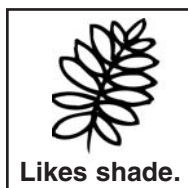
You do best in a certain kind of habitat. So do plants! To grow and thrive, it's important to have the right conditions. Be a friend to plants. Notice where each grows best. Then let it grow there!

Walk around your lawn, schoolyard, or neighborhood park. Notice where different plants grow well. What is it like? Is it wet or dry? Shady or sunny? Are there places where nothing grows?

Use what you learned on your walk. Draw ferns, cattails, flowers, and other plants where each would grow best.

**Make a path from the cabin to the lake.  
Put the right plants in the right places.**

*Plants growing in their own best habitat are the best survivors.*



## Tips for Grown-ups:

Use native plants in your landscape. Not only are they interesting, but they also result in less water use; less need for pesticides and fertilizers; and better habitat for butterflies, birds, and other wildlife.

See:

U.S. EPA's Green Landscaping with Native Plants  
<http://www.epa.gov/greenacres/>

EPA Mid-Atlantic Region Green Landscaping  
[www.epa.gov/reg3esd1/garden/index.htm](http://www.epa.gov/reg3esd1/garden/index.htm)

Audubon at Home  
[http://www.audubon.org/bird/at\\_home/index.html](http://www.audubon.org/bird/at_home/index.html)

National Wildlife Federation Backyard Wildlife Habitat Program  
<http://www.nwf.org/backyardwildlifehabitat/>

The Nature Conservancy's Wildland Invasive Species Team Web Site  
<http://tncweeds.ucdavis.edu/>

# Purple Plague!

# WANTED

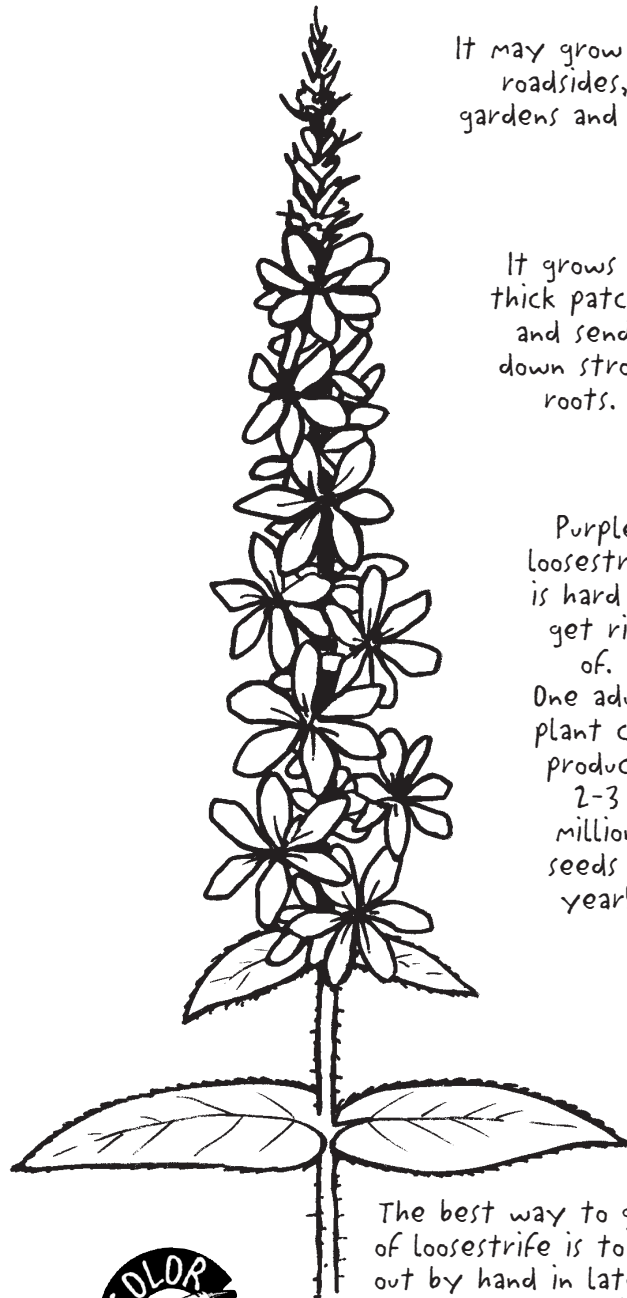
**P**urple loosestrife is pretty—and pretty dangerous. Why? This weed hogs the land and crowds out native plants and wildlife. It causes trouble when it grows in wetlands. The stems and roots are so tough that boats and wildlife can't get through. Other plant life can't survive where purple loosestrife takes over. Then wetland animals lose their food and shelter.

When purple loosestrife was brought to North America, its natural enemies were left behind. With nothing to stop it, the plants spread like wildfire. Now something's bugging purple loosestrife. Experts brought natural insect enemies from Europe to eat the plants. These beetles can slow purple loosestrife's spread.



People have increased the spread of purple loosestrife by planting it in gardens and by using it as a pollen source for honey bees. Have you seen purple loosestrife in a garden near you?

**Did You Know?**



It may grow along roadsides, in gardens and parks.

It grows in thick patches and sends down strong roots.

Purple loosestrife is hard to get rid of. One adult plant can produce 2-3 million seeds a year!



The best way to get rid of loosestrife is to pull it out by hand in late June, July, and early August, before the plant has gone to seed.

Unscramble the words to see the only states where purple loosestrife does NOT grow!

**O R A D F I L**

**A W I I H A**







# Tips

## Stop Purple Loosestrife!

- ☐ If you see purple loosestrife, pull it up right away. Put the plant pieces in plastic bags.
- ☐ Tell others about purple loosestrife. It destroys native plants, animals, and wetlands.
- ☐ Read labels before you buy any seed packages. You'll find purple loosestrife seeds in some wildflower seed mixes. Don't buy them!

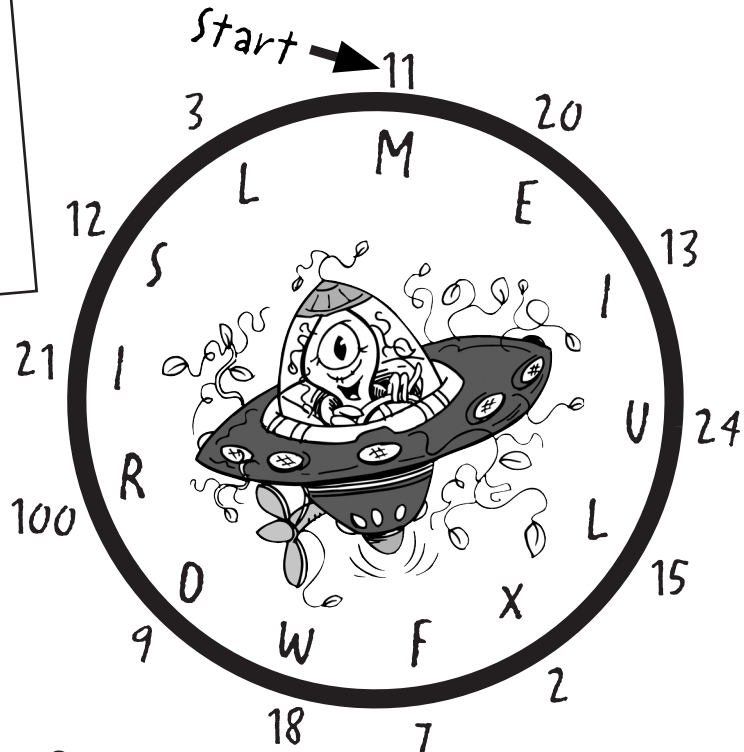
Check  
boats  
for  
milfoil!



# BEWARE

Another alien weed has invaded America.  
This weed

- clogs rivers and lakes,
- crowds out native plants,
- grows into mats so thick that boats and swimmers can't get through, and
- destroys food and habitat for our fish and water birds.



Circle the letters by the odd numbers.  
You'll spell the name of this weed!

\_\_\_\_ Feet  
\_\_\_\_ Inches  
Date: \_\_\_\_\_

With moist soil and full sun,  
purple loosestrife can grow up to  
10 feet tall. How tall are YOU?

Did  
You  
know?

## Tip for Grown-ups:

Pulling purple loosestrife? Thoroughly brush off your clothes and equipment before leaving the site so you don't transport the small seeds to new areas. Put all purple loosestrife plant pieces in plastic bags (vegetation rots quickly in plastic). Take the bags to a sanitary landfill site. Be sure the landfill site doesn't require bags to be broken open for composting. Composting is not advised, as purple loosestrife seeds may not be destroyed and the thick, woody stems and roots take a long time to decompose. If facilities exist in your area, incineration is an effective way to dispose of plant material.



# Outsmart those pests!



1

Put up \_\_\_\_\_  
25 18 9 23 19 12 6 8 22 8

Plant \_\_\_\_\_  
8 6 13 21 15 12 4 22 9 8

and plants with berries. These attract birds to feast on insects that harm plants.

2



Welcome \_\_\_\_\_  
7 12 26 23 8

They eat \_\_\_\_\_  
8 15 6 20 8

that eat and damage plants.



4

Take

\_\_\_\_\_  
20 26 9 25 26 20 22

and recycling outdoors.

3



Clean up

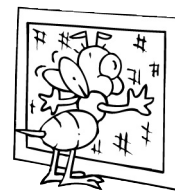
\_\_\_\_\_  
24 9 6 14 25 8

Wipe up spills. Keep rooms clean.

5

Put \_\_\_\_\_  
8 24 9 22 22 13 8

on doors and windows. Keep insects out!



6

Stake up

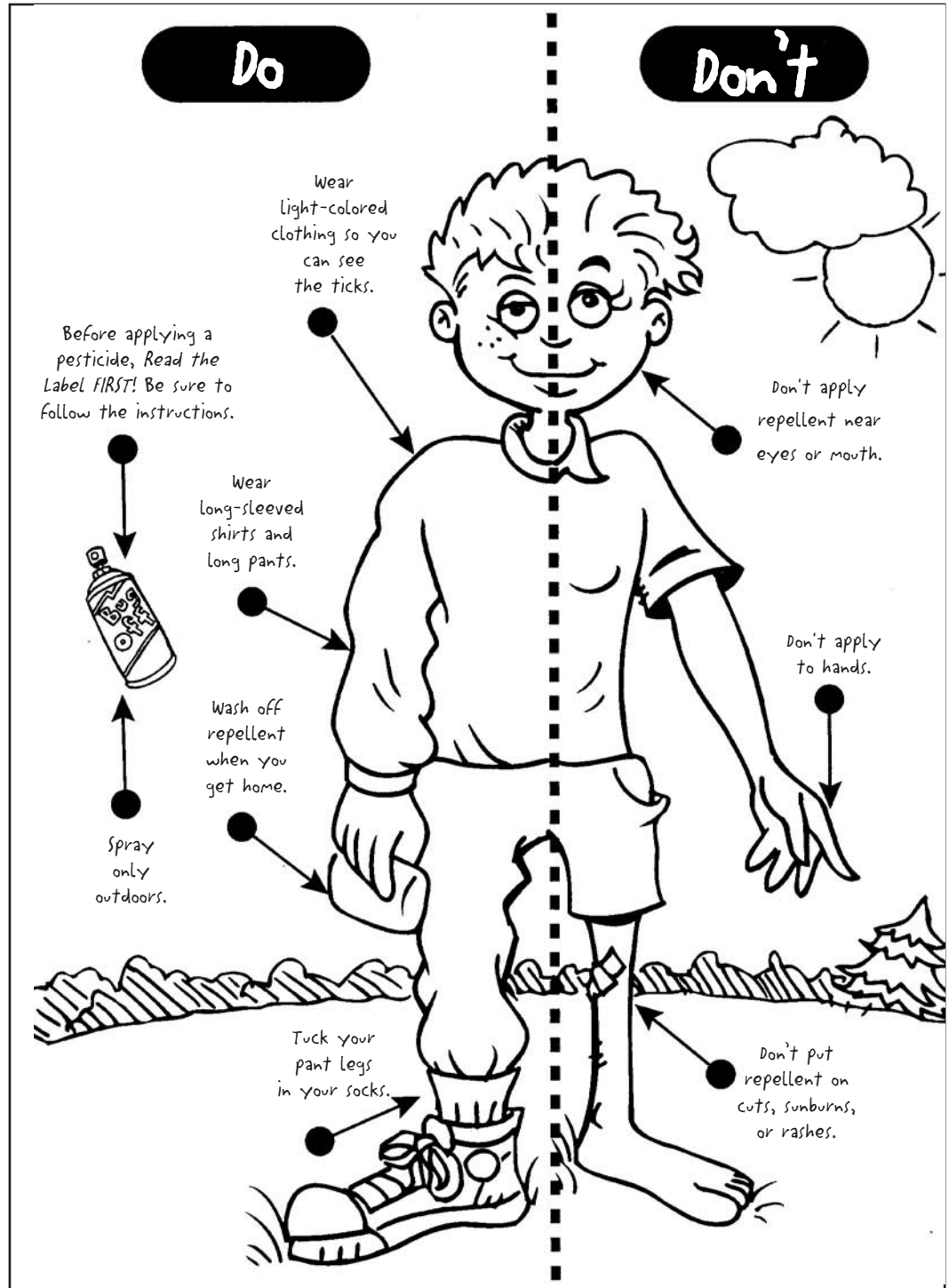
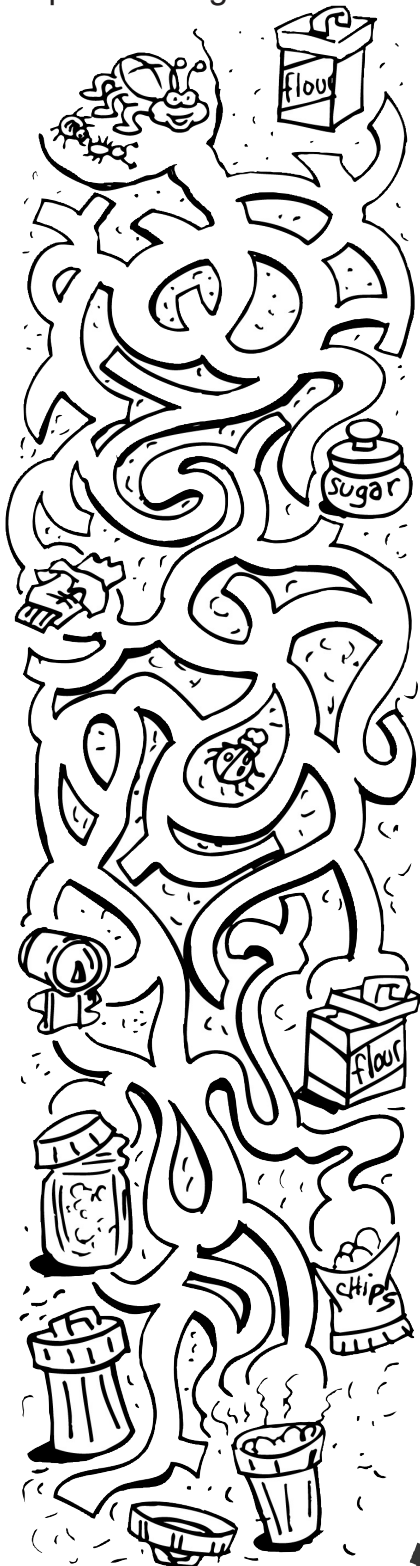
\_\_\_\_\_ to keep  
7 12 14 26 7 12 22 8

their leaves off the ground. Water them with a can or bucket, not a spray. Then spores that live in the soil won't splash up on the plants and make them sick.



# Keep Pests from Pestering You Inside and Outside Your House!

Kitchen pests like cereal, flour, oatmeal, crackers, and pancake mix. Travel the maze to see which containers pests can get into.



## Tip for Grown-ups:

Think you've got pests? Identify the pest problem before you decide what to do. Some pests (or signs of them) are easy to spot. But sometimes we are fooled. What looks like a plant "disease" may actually be a sign of poor soil or lack of water. To help you identify your pest and learn the most effective ways to control it, use free sources from the library or local nurseries. Or contact your local Cooperative Research, Education, and Extension Service. (<http://www.ree.usda.gov/1700/statepartners/usa.htm>)

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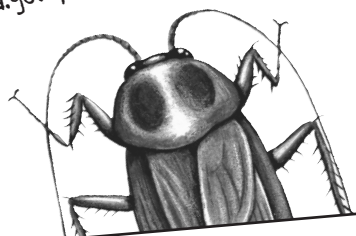


# Midnight Raiders: Cockroach Invaders

Cockroaches love living with people. Homes give them lots of food and cozy spaces to rest and breed. But no one wants cockroaches in their home. They smell bad. They run all over at night. They can cause allergies, too.

To get rid of roaches, think like a roach. What would make you leave a cozy human home?

See the Roach Prevention Activity Web Site for Kids at  
<http://www.epa.gov/pesticides/kids/roaches/english/>



## Tips

### Get Rid of Roaches

#### Check things to do:

- ☐ Fix leaky pipes and faucets. (Cockroaches need water.)
- ☐ Take out the garbage every day.
- ☐ Keep food in closed containers.
- ☐ Don't leave dirty dishes in the sink overnight.
- ☐ Wash food from cans before recycling.
- ☐ Plug up cracks and holes. Young roaches can squeeze through a crack as thin as a dime.
- ☐ Clear out warm, dark places so roaches can't hide.

## Cockroach Menu

What's yummy to a roach? Search for the hidden words to find out.

Then make sure the roaches won't get to these goodies in your home!

V R N U J Y Q S P C G D J H H J R Z T □  
F I N G E R N A I L C L I P P I N G S □  
P M B T S J H W G U G D U Y D R R I Y □  
Z G E V K B S T D I K I G Z O G V B O □  
C Z S G V O O P I Q V P Z I C R G A W □  
Q W X L V S D O E C D E H R W E E M W □  
H T H U B E D E K A B V Y W I A C I G □  
Y A G E I Q Z Y J B N H O M P S R K L □  
U X U O W I Q V D I I U L D L E S M C □  
S R E N A C S O A P M N T I F I K U C □  
Q C X N D F Y T C K X Z D B L M P N R □  
U D I P S C W K H X Q U H I U G C H U □  
O S P O L X O B C Y U O J W N T X Q M □  
U W P E U V W M G F N N W E C G T K B □  
Z H U A P E T F O O D P E M L E S E S □  
P Q D O R M M Y D B A Z X E R H P Y R □

**Word Bank:** peanut butter; fingernail clippings; crumbs; pet food; glue; bookbindings; grease; soap

- Roaches scatter faster than you can blink your eye. Their waxy coat lets them flatten, and they easily slip through tiny cracks and holes.
- Cockroaches can cause asthma in many kids. The skins cockroaches shed when they grow cause the allergies. These skins float around in homes.



**Nasty!** When they eat, cockroaches barf a little bit. They also leave poop. These smelly things mark the spot so the roaches can find food later.

Frogs, lizards, birds, and mice think cockroaches make tasty treats!